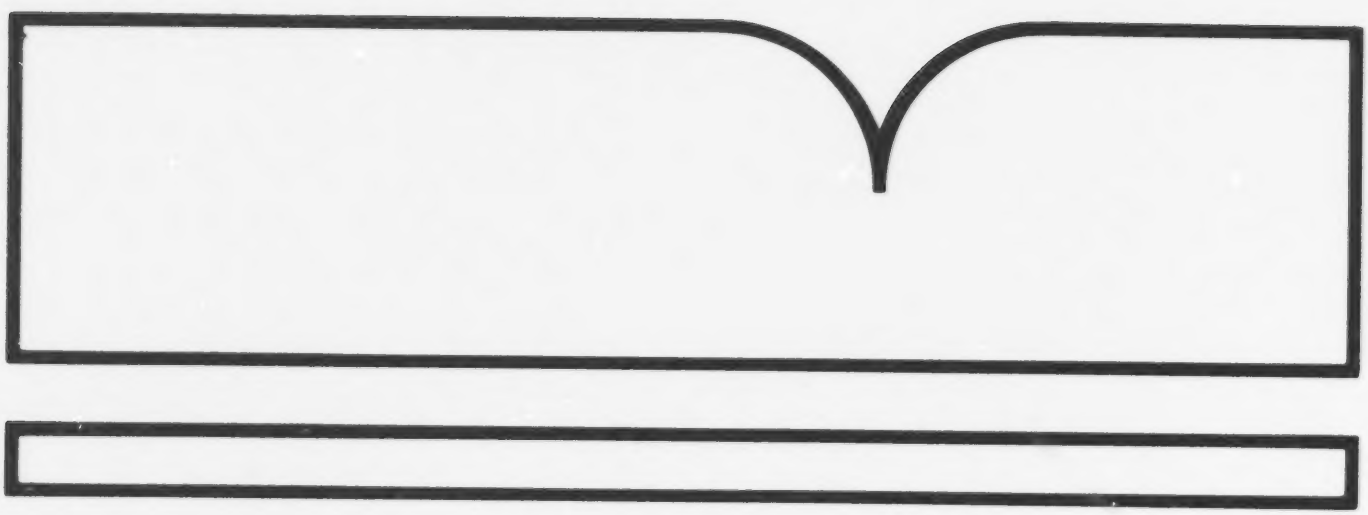
PB90-203480

Declaration for the Record of Decision: Reeser's Landfill Site Upper Macungie Township, Lehigh County, Pennsylvania

(U.S.) Environmental Protection Agency, Philadelphia, PA

30 Mar 89



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Abstract: The decision document presents the selected remedial action alternative for the Reeser's Landfill Superfund Site in Lehigh County, Pennsylvania. The selected remedial action alternative has been developed in accordance with CERCLA as amended by SARA, and, to the extent practicable, the National Contingency Plan. The selected alternative for the Reeser's Landfill site is No Action With Ground Water Review. Under this alternative, no remedial actions will be taken at this site and ground water quality in the immediate vicinity of the landfill will be reviewed within five years.

PB90-203480

DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Reeser's Landfill Site, Upper Macungie Township, Lehigh County, Pennsylvania.

Statement of Basis and Purpose

This decision document presents the selected remedial action alternative for the Reeser's Landfill Superfund Site in Lehigh County, Pennsylvania. The selected remedial action alternative has been developed in accordance with CERCLA as amended by SARA, and, to the extent practicable, the National Contingency Plan.

This decision is based upon the Administrative Record. The attached index identifies those documents which comprise the administrative record. The following was of particular relevance for the purposes of this decision document:

1. Draft Final Remedial Investigation/Feasibility Study Report For The Reeser's Landfill Site, Upper Macungie Township, Pennsylvania, Volumes I, II, and III, prepared by CDM Federal Programs Corporation, November, 1988.

The Commonwealth of Pennsylvania concurs on the selected remedy.

Description of the Selected Remedy

The selected alternative for the Reeser's Landfill site is No Action With Ground Water Review. Under this alternative, no remedial actions will be taken at this site and ground water quality in the immediate vicinity of the landfill will be reviewed within five years.

Declaration

The selected alternative is protective of human health and the environment. No remedial action will be taken, however ground water quality in the vicinity of the site will be reviewed within five years.

3-30-89
Date

Stanley L. Laskowski
Acting Regional Administrator
EPA, Region III

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Site Description and Summary of Remedial Alternative
Selection for the Reeser's Landfill Superfund Site
Lehigh County, Pennsylvania

Introduction

The Superfund investigation of the Reeser's Landfill Site addresses various environmental media and their potential contamination with heavy metals and organic compounds. The site was studied for its potential degradation of Iron Run, a nearby stream whose waters eventually discharge into the Lehigh River, and of area ground water, particularly that of the neighboring residences and the Lehigh County Authority No. 6 production well which is located approximately 1800 feet east of the landfill. The site was also investigated for its potential to produce adverse health effects because of direct contact with site soils.

This Record of Decision summarizes the results of a Remedial Investigation/Feasibility Study which addresses the landfill and the surrounding area, and presents the selected remedial alternative.

Community Relations History

Pursuant to Section 300.67(c) of the National Contingency Plan (NCP), a Community Relations Plan was developed for the Remedial Investigation/Feasibility Study (RI/FS). A public meeting regarding the initiation of the RI/FS activities was held at the Upper Macungie Township Building on September 29, 1987. In compliance with Sections 113 (k)(2)(i-v) and 117 of SARA, the Administrative Record, including the Proposed Remedial Action Plan, was placed for public viewing at the Parkland Community Library, Allentown, Pennsylvania on Thursday, February 23, 1989. An announcement of the availability of the Administrative Record was placed in the Allentown Morning Call on February 24, 1989. The Administrative Record included the Draft Final Remedial Investigation/ Feasibility Study Report which listed the alternatives developed as part of the Feasibility Study. A period for public review and comment on the Proposed Remedial Action Plan was held from February 25, 1989 to March 26, 1989. All documents relevant to the development and the conducting of the RI/FS and the selection of the remedial alternative were submitted by EPA to the Pennsylvania Department of Environmental Resources (PA DER) for review and comment during the RI/FS process.

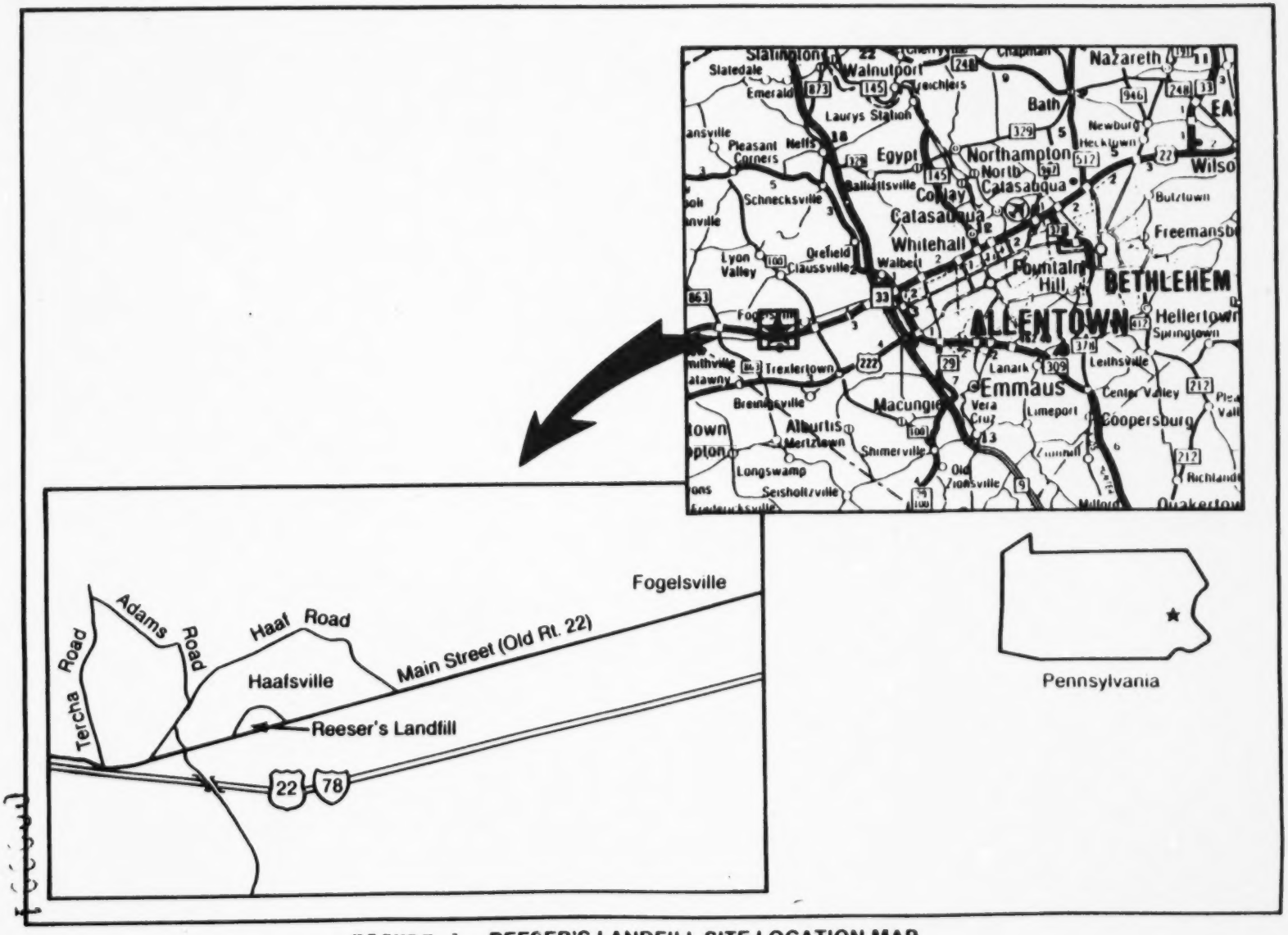

FIGURE 1 **REESER'S LANDFILL SITE LOCATION MAP**

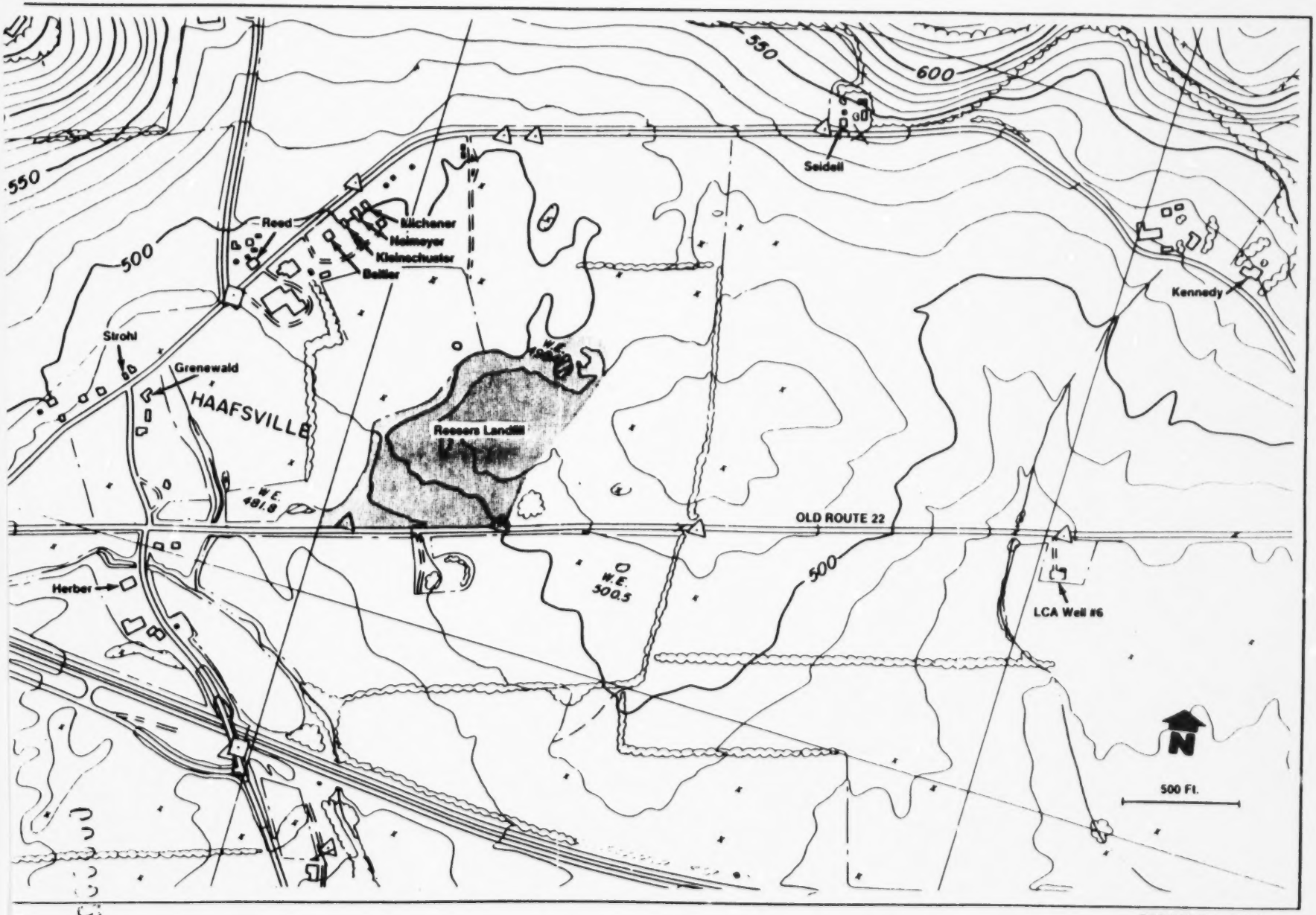

FIGURE 2

RESIDENTIAL WELL SAMPLING LOCATIONS

Site Location and Description

The Reeser's Landfill site is located at 40 degrees 34 minutes 50 seconds west longitude and 75 degrees 39 minutes 25 seconds north latitude in Upper Macungie Township near Haafsville, Pennsylvania. The landfill is an inactive unlined municipal refuse dump which was closed in approximately 1980 and which appears as a low-lying mound with respect to local grade. The site is approximately 5 miles west of Allentown, Pennsylvania, and is bounded by Old Route 22 to the south and cultivated fields to the east, north, and west. Homes are located west and northwest of the site. Another Superfund site, the Hebelka Landfill site, is located approximately one-half mile to the west of the Reeser's Landfill site. Reeser's Landfill and the surrounding areas are represented on the Topton, Pennsylvania, U.S.G.S. topographic quadrangle. (Figures 1 and 2 show the location of the site). The landfill is located in a small valley which is approximately one mile wide and surrounded by hills on the north, south, and west. The valley is characterized by relatively flat topography. Elevations in the valley range from a low of 420 feet above sea level to a high of 525 feet. Above this elevation there is a slope break with the surrounding hills. Elevations for the hills range from 500 to 700 feet above sea level. Iron Run provides the major drainage for the area and has its headwaters in the hills to the west of the valley. The valley also has a number of water-filled circular or ellipsoidal-shaped depressions. These depressions could represent either quarried-out areas or the surface expression of sinkholes. Sinkholes are usually found in areas that are underlain by soluble rock units and are one of the principal features of karst terrane. The valley contains two small towns: Haafsville, in the northwest corner of the valley, and Fogelsville, in the northeast corner of the valley. The remainder of the valley is used for agricultural purposes.

The site lies within the Shantz Spring drainage basin. The city of Allentown draws almost all of the flow from Shantz Spring for public supply. The major surface waters found in this basin are Cedar Creek and Iron Run. Approximately 78 percent of the basin is underlain by the Paleozoic carbonate rocks; the remainder of the basin receives its groundwater from the Martinsburg Formation. Within the carbonate-floored areas of the basin, surface drainage is affected by a few irregularly spaced shallow, entrenched streams that have gentle gradients. There are relatively few tributaries to the principal streams because most of the drainage is by subsurface routes.

In the valley in which Reeser's Landfill is located, Iron Run strikes a course near the center flowing in an east-southeast direction. Where Iron Run enters the valley, it flows within several hundred feet of the Hebelka Superfund site. Iron Run is fed by several small, unnamed tributaries. One of these tributaries drains the marshy area 350 feet to the west of Reeser's Landfill before crossing old Route 22 and connecting with Iron Run. The small tributaries in the valley have their origin at seeps and springs near the contact between the Martinsburg Shale and the Cambrian-Ordovician carbonates.

The unnamed tributary to the west of Reeser's Landfill also receives a small contribution to its flow from the small sedimentation pond located in the southwest corner of the landfill during periods of wet weather. This sedimentation pond is fed, in turn, by a drainage ditch located along the landfill toe on the north, west, and south sides of the landfill. The sedimentation pond also receives runoff from old Route 22 which borders the southern edge of the landfill. Drainage and runoff from the eastern face of the landfill is to the south along the edge of the bordering crop field.

A series of seeps along the northeastern, northwestern, and southern perimeters of the landfill and a network of surface stream channels, generally on the southern flank of the landfill, most likely handle the surface and near-surface landfill drainage to the drainage ditch network.

A few small ponds and/or puddles are found in the northern area of the landfill. The largest of these, an open water-filled pit in the northeast corner of the landfill, is the result of the excavation of burning waste during attempts to extinguish a landfill fire in the winter of 1980-81. The origin of the other smaller ponds is not as clear but may represent areas where the underlying waste is particularly impermeable. Most of these ponds are seasonal; however, they contained water at all times during the RI investigation, but water levels varied by about one foot. The total area of all ponds onsite, including the sedimentation pond, is approximately 6500 square feet. A series of offsite ponds exists in the area. These ponds could be water-filled, naturally-occurring depressions, or water-filled pits from earlier iron mining activities. Figure 3 shows the major surface drainage features in the vicinity of Reeser's Landfill.

Reeser's Landfill is located in a part of Lehigh County that is underlain primarily by Cambrian-Ordovician age carbonate rocks (limestone and dolomite) of the Beekmantown group and the Jacksonburg formation. The Beekmantown group is reported to be represented by the Epler dolomite. The Jacksonburg formation is subdivided into its upper and lower members, cement limestone and cement rock, respectively. Other geologic formations represented in the area are the Middle Ordovician Martinsburg shale and some patchy Quarternary deposits. A thick saprolite (40 to 120 feet thick) mantles the carbonate rocks in the area.

Considerable faulting, folding, and fracturing of the carbonate rocks have facilitated the process of weathering and solution to develop a karst terrane. Karst terranes are characterized by hydrologic features such as springs, solution sinks (sink-holes), disappearing streams, thick soils, and saprolite and large volumes of ground water in storage. It has been demonstrated that groundwater flow in the valley is from the hills surrounding the valley and that the flow is toward the center of the valley. Water levels from five deep bedrock wells and three shallow overburden wells installed during the RI generally support this conclusion. Homes in the immediate area of the landfill use well water for drinking. In addition, the Lehigh County Authority (LCA) operates a municipal well (LCA #6) less than 2000 feet east of the site.

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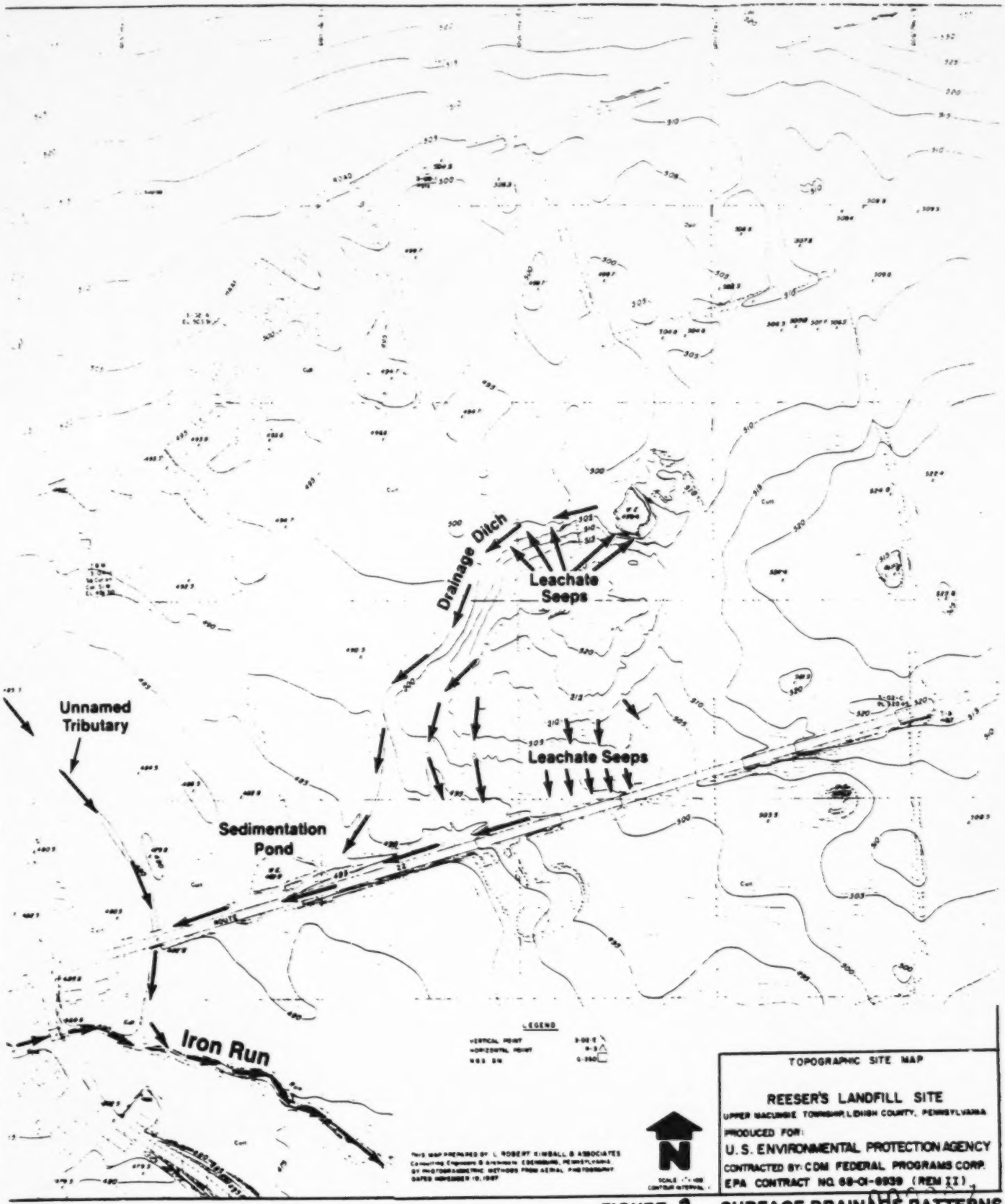

FIGURE 3 SURFACE DRAINAGE PATTERNS

Rainfall in the Allentown area averaged 44.31 inches per year from 1951 to 1980. Normal monthly precipitation varies little throughout the year, with the greatest amounts of rainfall in July, August, and September.

Site History

The area that is now the Reeser's Landfill was originally operated as an open pit iron mine until the late 1800s (Miller, 1941). Miller describes the iron mining operations in the area as consisting of either surficial or shallow (less than 50 feet deep) deposits of limonite discovered by the finding of float ore deposits or areas of strongly-colored brown soils. Miller (1941, p. 284) further describes the mine that existed on the site of Reeser's Landfill: "This pit is filled with water and the sides are grass grown. A little yellow clay is present, considerable quartz, some of which contains limonitic material, some lump ore, and a few fragments of limestone. The ore, from the fragments on the side of the mine, must have been associated with damourite slate." Ownership of the mine is attributed to Jesse Laros.

The iron mine was located on the southern half of an irregularly-shaped 51.5-acre property currently owned by Mrs. Arlene Schucker. Mrs. Schucker's husband allowed the open pit to be used as a dump by local residents. In the late 1960s Mr. and Mrs. Schucker leased the property to Edward F. Reeser of Reeser's Hauling Service. Aerial photographs from 1971 show active fill operations. A Solid Waste Permit Application submitted by Edward F. Reeser dated July, 1977 is on file with PADER; however, the permit was never issued. The PADER ordered Mr. Reeser in 1981 to properly close the landfill to comply with the Pennsylvania municipal waste disposal regulations. Through a series of appeals by Mr. Reeser, the order for proper closure has been upheld.

During its period of operation, the landfill reportedly received many types of wastes, but no record of types and quantities was kept. Waste types listed on the 1977 Permit Application include domestic and commercial wastes from the Allentown area and industrial wastes such as plastics, thread, brewery wastes, processed food wastes, and paper. Demolition wastes were also disposed of onsite, including wooden pallets, tree limbs, and stone wastes. PADER personnel have stated that battery wastes and drums may also be present (NUS FIT Region III Report, 1983). However, this has not been confirmed.

A study of available historical aerial photographs was performed by the U.S. Environmental Protection Agency (EPA) Environmental Photographic Interpretation Center (EPIC) in Las Vegas, Nevada, and Warrenton, Virginia. Five photographs, representing 43 years of site history (1939-1981), were examined. An old quarry containing water is visible in the 1939 aerial photograph. By 1971, landfill operations had commenced, as evidenced by two active waste disposal areas. Surface drainage from the landfill is shown to flow west into Iron Run. The 1974 photo shows continuing disposal operations. Operations were still ongoing in 1979 with disposal activity shifting to the northwest portion of the landfill. The landfill appears relatively dormant in the 1981 photograph with leachate stains on the western edge and a concentrated area of dark

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stains in the northeast corner.

In 1981, a fire started in the northeast corner of the landfill and burned for a number of months. The fire was eventually extinguished through the efforts of Edward Reeser and the local fire company, but it left a small water-filled ponded area in that location.

In August 1983, the EPA Region III FIT team conducted the Preliminary Assessment/Site Inspection (PA/SI) of Reeser's Landfill. The results of the PA/SI are presented in Figure 4. A home well survey was performed at that time, and onsite and offsite samples were also collected. The results of the FIT investigations were used as a basis for developing the Hazard Ranking System (HRS) score. The HRS score for Reeser's Landfill was 30.35. The FIT data were also used to recommend field investigation activities for the RI/FS.

A number of wells in Haafsville were sampled by the FIT team including the wells at the Hilber, Merkel (Grenewald), and Reed residences and LCA well #6. The Reed well, an abandoned, hand-dug well, at that time showed concentrations of 50 ug/L lead and 14 ug/L cadmium in an unfiltered sample. Maximum Contaminant Levels (MCL) for lead and cadmium in drinking water are 50 and 10 ug/L, respectively. Elevated concentrations of iron and manganese were noted in the Reed well sample and at lower levels in other ground water samples. Iron and manganese affect the aesthetic quality of the water but do not pose a potential toxicological hazard. The Merkel (Grenewald) well sample was the only ground water sample collected where an organic compound was identified. Acetone was found at a concentration of 41 ug/L at this location. The presence of acetone alone in one sample may be suspect since acetone is commonly used for field decontamination of sampling equipment and is a common laboratory solvent.

Surface water samples were taken by the FIT team at unspecified upstream and downstream locations in Iron Run, the sedimentation pond, and the ponded water in the pit where burning material was excavated. Only the downstream Iron Run water sample showed evidence of contamination where mercury was detected at 0.6 ug/1. Revised EPA Ambient Water Quality Criteria (AWQC) currently establish a recommended level of 0.012 ug/1 for active mercury.

Water and sediment or soil samples were collected by the FIT team from upstream and downstream locations, the unnamed tributary, the sedimentation pond, the burn pond, and stained landfill soils. The sample from the burn pond showed 0.6 mg/kg of mercury and the stained soil sample had 1.05 mg/kg mercury. In the northeastern U.S., mercury concentrations in uncontaminated soil range from 0.01 to 3.4 mg/kg, with an arithmetic mean of 0.12 mg/kg (Shacklette, 1984). Low levels (less than 400 ug/kg and 800 ug/kg) of polynuclear aromatic hydrocarbons (PAHs) and phenol were identified in the sediment sample collected from an unnamed tributary 1,950 feet to the east of the landfill. This stream flows by the production well, LCA #6, but does not drain the landfill itself.

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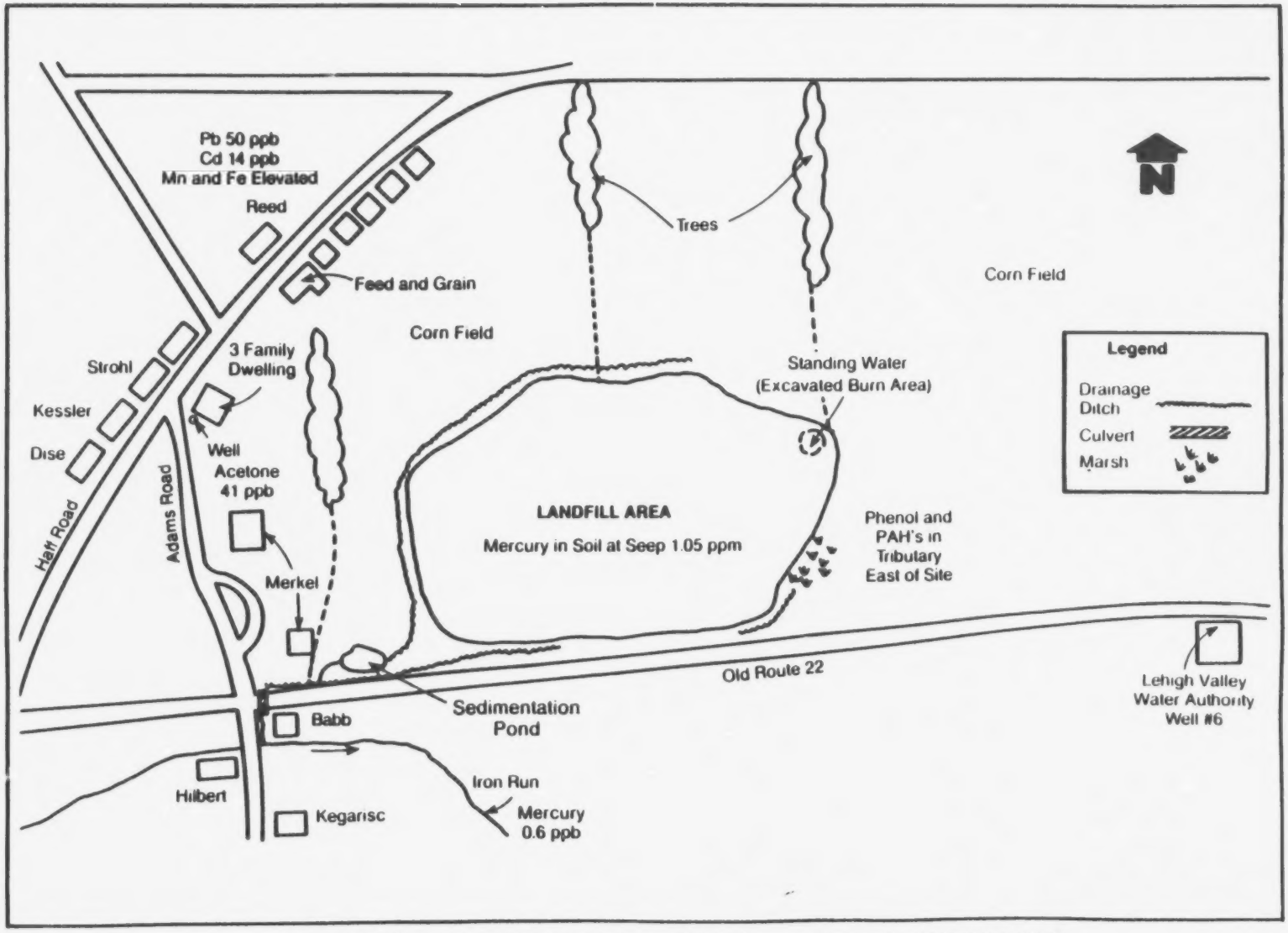

FIGURE 4 **CONTAMINATION IDENTIFIED IN FIT REPORT - REESER'S LANDFILL SITE**

An aerial photograph taken in 1987 shows the Reeser's Landfill site and the surrounding area as it appeared during the RI/FS activities. It shows that few if any changes have occurred at the site since 1981. In July 1987, the Reeser's Landfill site was included on the National Priorities List (NPL). A Remedial Investigation and Feasibility Study (RI/FS) of the site was authorized by EPA in April, 1987. The field work for the Remedial Investigation was conducted in the fall of 1987 and the winter of 1988. The overall objective of the remedial investigation (RI) was to collect information needed to evaluate actual and potential risks to receptors from exposure to site-related contamination in soil, surface water, or ground water. This information would also support a feasibility study of remedial alternatives for the Reeser's Landfill site.

Specific objectives of the RI included:

* Determining whether significant soil contamination exists both on and off the site and, if so, determining the approximate horizontal and vertical extent of the material that would have to be removed, treated, or capped.

* Identifying types and locations of any buried waste materials at the site.

* Evaluating subsurface stratigraphy relative to potential contaminant migration pathways. In particular, determining if highly permeable soil zones or major fractures or solution cavities in bedrock near or under the site serve as conduits for preferential ground water or contaminant movement.

* Characterizing horizontal and vertical ground water flow patterns and rates on the site relative to the subsurface stratigraphy, and determining the potential for offsite contaminant migration via ground water.

* Determining the nature, magnitude, and extent of any ground water contamination relative to the source area and potentially sensitive receptors, especially private and public water supply wells in the area.

* Determining the nature, magnitude, and extent of any surface water contamination relative to the source area. Determining if this contamination, if present, is from the Reeser's Landfill site or from some other source.

The RI was conducted in one phase of field activities lasting approximately 6 months that included:

* Geophysical survey.

* Landfill test pits and sampling.

* Onsite and offsite surface soil and surface water sampling.

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* Installation of five bedrock monitor wells and four overburden monitor wells.

* Completion of seven additional onsite and offsite soil borings.

* Analysis of soil and water samples from each of the wells installed during the RI.

* Analysis of water samples from public and nine private water supply wells.

* Completion of an aquifer pumping test.

* Development of an endangerment assessment based on the results of the RI program.

Field activities for the project were completed in March, 1988.

All investigations at the site have been federally funded. EPA mailed 47 information request letters pursuant to Section 104(e) of CERCLA. Notice Letters were mailed to Edward Reeser and Mrs. Arlene Schucker offering them the opportunity to participate in the remedial process; however, this offer was not accepted. EPA's enforcement efforts have found no records or evidence connecting the site with hazardous wastes that may have been produced or shipped by any of the waste generators that were contacted during the potentially responsible party search.

Scope and Role of Response Action

A Remedial Investigation was conducted in 1987-1988 to determine the risks posed by the site through direct contact with landfill soils, ingestion of ground water, or to biota in the runoff receptor stream, Iron Run.

This Record of Decision presents the selected remedial alternative for all aspects of the entire site and does not represent an operable unit.

Summary of Site Characteristics

The 1983 Site Inspection (SI) found low levels of lead (Pb) and cadmium (Cd) in the water of an abandoned, hand-dug well (the "Reed" well) approximately 800-1000 feet northwest of the Reeser's Landfill. The SI also found low levels of mercury (Hg) contamination in the runoff receptor stream, Iron Run, in an onsite pond sediment sample, and in a soil sample from a landfill leachate seep.

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For the purposes of the 1987-88 Remedial Investigation, a number of media were sampled and analyzed. The media sampled included landfill soils, area ground water, and various surface waters, including the receptor stream, Iron Run. Table 1 presents a summary of the sampling and analysis performed for the RI. The following is a brief summation of the RI sampling effort:

During the 1987-88 RI, EPA analyzed two rounds of water samples from a number of nearby residential water supplies and from the Lehigh County Authority (LCA) No. 6 production well. No organic contamination of concern was detected in these water supplies. A slightly elevated lead (Pb) level (46 ppb) was found in the Grenewald well (see Figure 2 for location). However, neither this nor any of the other low levels of contamination detected were related to the Reeser's Landfill Site.

The RI also established eight offsite monitoring wells in order to ascertain "background" ground water quality and to determine the quality of ground water that might carry contaminants from the site. (Figure 5 shows the locations of these monitor wells.) The water in these wells showed no contamination above health-based levels. Table 2 shows maximum, minimum and average concentrations for inorganic constituents for those samples where positive analytical results were realized.

Five vertical borings were made directly into the landfill. These borings showed the trash layer to be approximately 30-60 feet thick. Figure 5 shows the approximate locations of these borings and Figure 6 gives a detail of each of the five borings. Soil was encountered at the bottom of each of the five borings, and boring SB-09S was continued into this soil for 53 feet without encountering bedrock. It is estimated that the native soil beneath the trash is approximately 57 feet thick and was found to be uniformly dry in all five borings. All samples of soil collected beneath the trash layer were subjected to TCLP analysis and none of these samples failed that testing for any analytes.

The FEMWATER-1 computer Model was chosen to simulate moisture flow in the unsaturated zone beneath the landfill. The model is a generalized computer code that can be used to simulate a wide variety of ground water flow problems including those involving complex, time-varying boundary conditions, multiple layers and soil types, and deformable soil and water matrices.

The results of the steady-state simulation indicate that measured soil moisture values from soil samples were nearly at steady state.

The results of the transient simulation suggest that water is not percolating through the landfill and reaching the natural soil mantle beneath the landfill since much higher moisture content values would have been observed. This conclusion is further reinforced by the observed higher moisture content values in the offsite wells (0.44)

Table 1

Summary of Sampling and Analysis

Media	Sample Location	Analyses Performed
SOIL		
Leachate seeps	LS-01 thru LS-11	Target Compound List (organics)
Field surface soils	FS-01 thru FS-10	(VOA, BNA, pesticides, PCBs)
Off-site shallow wells	SB-01 thru SB-06	Target Analyte List (inorganics)
		Cyanide
		Total Organic Carbon (TOC)
		Total Petroleum Hydrocarbons
SURFACE WATER AND ASSOCIATED SEDIMENT STREAMS		
Sedimentation Pond	SW-1 thru SW-09	SURFACE WATER
Off-site Ponds	(exclude location	
On-site Ponds	SW-7 for water)	Target Compound List (organics)
Springs	SSP-1 thru SSP-3	(VOA, BNA, pesticides, PCBs)
Iron Run	P-1 thru P-5	Target Analyte List (inorganics)
Unnamed Tributary	LP-1 thru LP-4	(unfiltered)
	SS-1	Cyanide
		Ammonia
		Temperature (field)
		pH (field and lab)
		Conductivity (field and lab)
		SEDIMENT
		Target Compound List (organics)
		(VOA, BNA, pesticides, PCBs)
		Target Analyte List (inorganics)
		Cyanide
		Total Organic Carbon (TOC)
		Total Petroleum Hydrocarbons
		Grain Size Analysis

Table 1, continued

Media	Sample Location	Analyses Performed
WASTE		
Test Pits	TP-A thru TP-E, TP-G thru TP-P TP-R, TP-T thru TP-Y	Target Compound List (organics) (VOA, BNA, pesticides, PCBs) Target Analyte List (inorganics) EP Toxicity (TCLP)
Well Borings	SB-07 thru SB-10	Cyanide Total Organic Carbon (TOC)
DRILLING MUDS	DM-1, DM-2	Target Compound List (organics) (VOA, BNA, Pesticides, PCBs) Target Analyte List (inorganics) Cyanide Total Organic Carbon (TOC) Total Petroleum Hydrocarbons
OFF-SITE MONITORING WELLS		
Deep	SB-01D thru SB-03D SB-05D and SB-06D	Target Compound List (organics) (VOA, BNA, pesticides, PCBs)
Shallow	SB-03S, SB-04S, SB-06S	Target Analyte List (inorganics) (filtered) Cyanide Total Organic Carbon (TOC) Dissolved Organic Carbon DOC) Nitrogen Series Chlorides Total Nitrogen Nitrogen Reducing Potential (field) Dissolved Oxygen (field) pH (field) Temperature (field) Conductivity (field)

000215

Table 1, continued

Media	Sample Location	Analyses Performed
RESIDENTIAL WELLS		
Round 1 Round 2	Identified by resident's name	Target Compound List (organics) (VOA, BNA, pesticides, PCBs) Target Analyte List (inorganics) (filtered) Cyanide Total Organic Carbon (TOC) Dissolved Organic Carbon DOC) Nitrogen Series Chlorides Total Kjeldahl Nitrogen Reducing Potential (field) Dissolved Oxygen (field) pH (field) Temperature (field) Conductivity (field)

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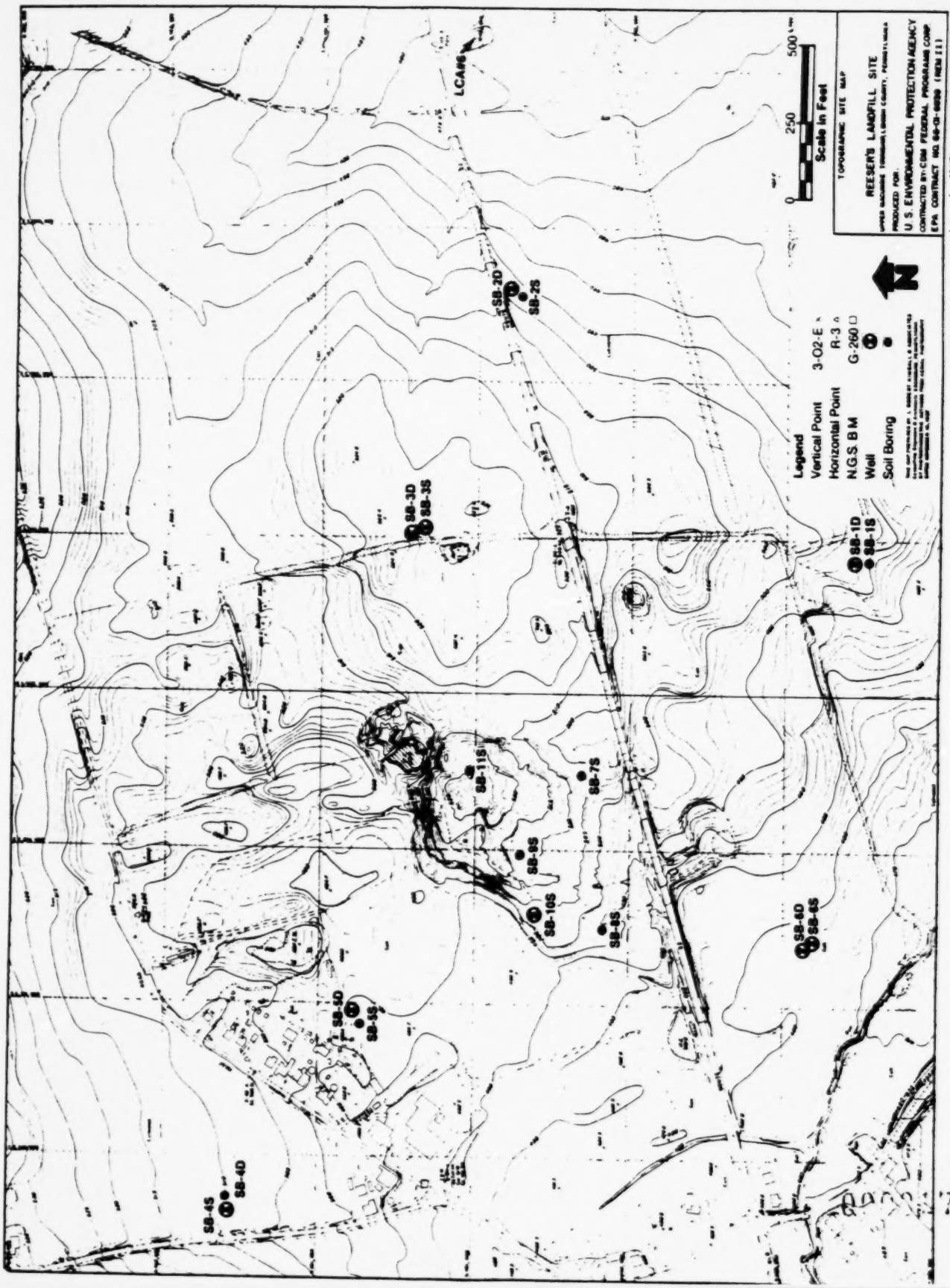

FIGURE 5 WELL AND SOIL BORING LOCATIONS

Table 2

Positive Analytical Results for
Inorganics: Monitor Well Water Samples

(µg/L)

	n	Average	Maximum	Minimum
Aluminum	2	78.5	134	23
Barium	8	45.1	247	3.9
Beryllium	1	1.2	1.2	1.2
Calcium	8	53,962.5	107,000	11,800
Copper	1	8.0	8	8
Iron	8	1,038.4	1,910	840
Magnesium	8	5,766.3	8,670	3,860
Manganese	8	133.3	789	4.6
Nickel	4	81.8	280	14
Potassium	8	1,424.8	2,830	30
Sodium	8	4,740.0	12,700	2,550
Zinc	8	201.9	1,490	5.6

n = Number of samples in which inorganic contaminants were detected.

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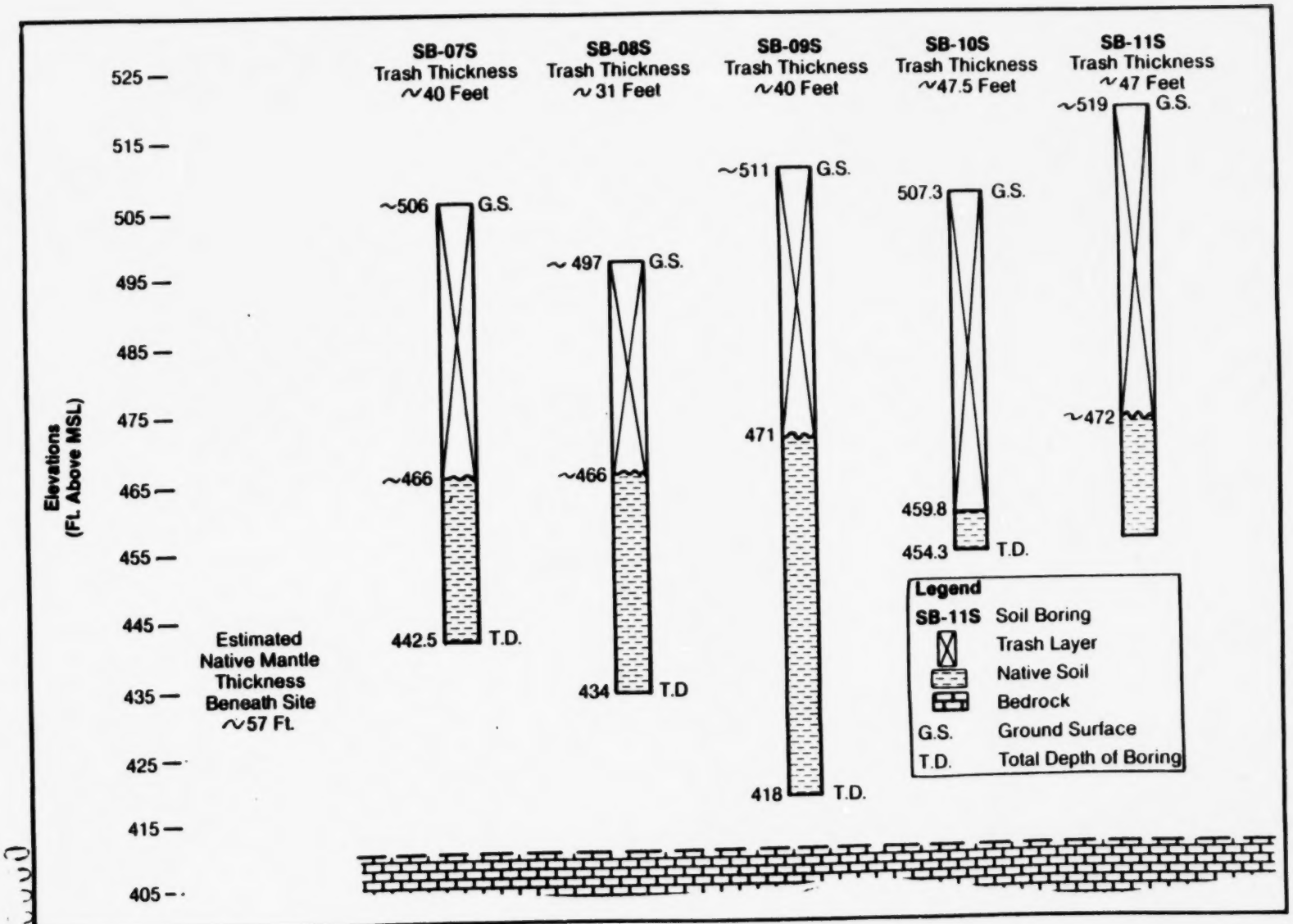

FIGURE 6 **LANDFILL BORING ELEVATIONS/STRATIGRAPHY**

which receive natural recharge as compared with the samples beneath the landfill (0.32).

Twenty-five backhoe pits were dug into the landfill (see Figure 7). Each pit was two feet wide by 12 feet deep by 20 feet long. Soil samples taken from the pits were subjected to TCLP testing, again with no sample failing the analysis. Observations of the wastes found during these excavations revealed no evidence of the dumping of hazardous wastes.

Samples were collected from the upper 3 inches of soil from offsite locations in order to identify and evaluate potential health risks resulting from direct contact with hazardous contaminants and to determine the extent of contaminant migration, if any, due to wind transfer. An additional objective was to determine background levels of contaminants. A total of 10 surface soil samples were collected from the offsite locations shown in Figure 8. These samples were designated FS-01 through FS-10. Sample locations were at varying distances from the landfill. Those positions closest to the landfill were used primarily to evaluate any contaminant migration. Samples collected farthest from the landfill attempted to establish background levels of contaminants.

Samples FS-02 and FS-03 were collected farthest away from the landfill to determine background soil conditions. However, when results from these samples were compared to the samples taken closest to the landfill, in most cases concentration levels were either about the same or only slightly higher. The one exception was the presence in sample FS-08 of an elevated concentration of cadmium at 202 mg/Kg and lead at 393 mg/Kg. However, since this sample was obtained in the farm field west of the site and is far in excess of all other analysis results for lead and cadmium, including those obtained directly from the landfill, this reported concentration is considered to be an anomaly. The pattern seems to demonstrate that little, if any, transport of contaminants has occurred from the landfill.

Eleven soil samples were collected at areas of stained soil on the slopes of the Reeser's Landfill under the assumption that these stained areas were evidence of leachate seeps and would represent a "worst case" analysis. The approximate locations of these sample points are shown on Figure 8. Only one volatile organic compound (1,1,1 trichloroethane) was detected in a leachate seep sample (LS-05) and only a few BNAs were detected in any of the samples. Several occurrences of pesticides were also found and are most probably related to the intensive agricultural activity which surrounds the site. As with the field soils, the concentrations of inorganics in the leachate seep soil samples were either slightly elevated or the same as compared to concentrations found in the background soil samples FS-02 and FS-03. Mercury, originally detected in a leachate seep on the landfill during the FIT investigation, was absent from these samples. Leachate seeps are usually considered places where landfill contaminants, if present, are detected. The absence of significant concentrations of constituents above background levels in the leachate seeps suggests that the surface and near-surface of the landfill are relatively uncontaminated. Table 3 is a comparison among inorganic analyses of landfill soils and background field soils.

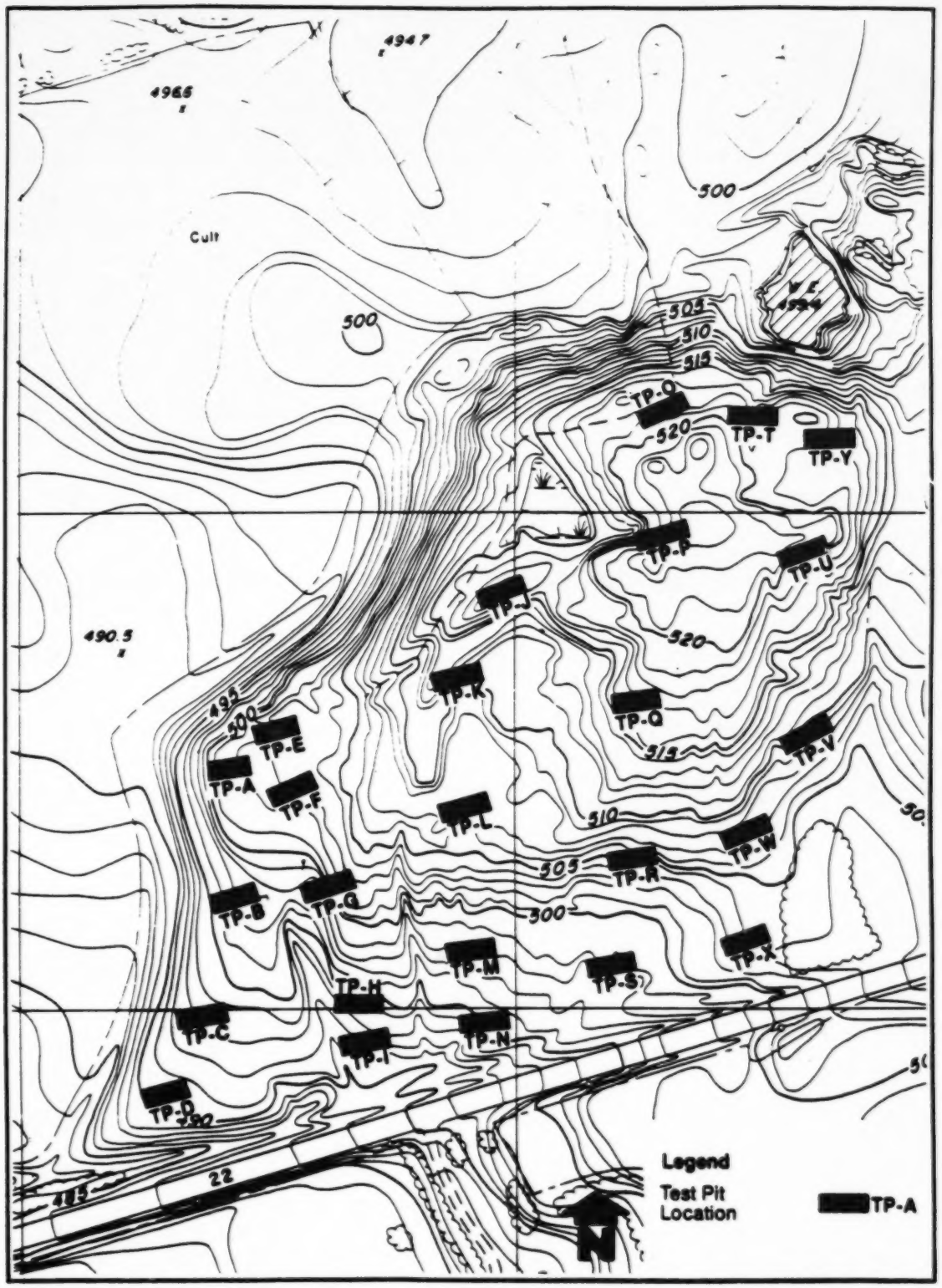

FIGURE 7 **TEST PIT LOCATIONS**

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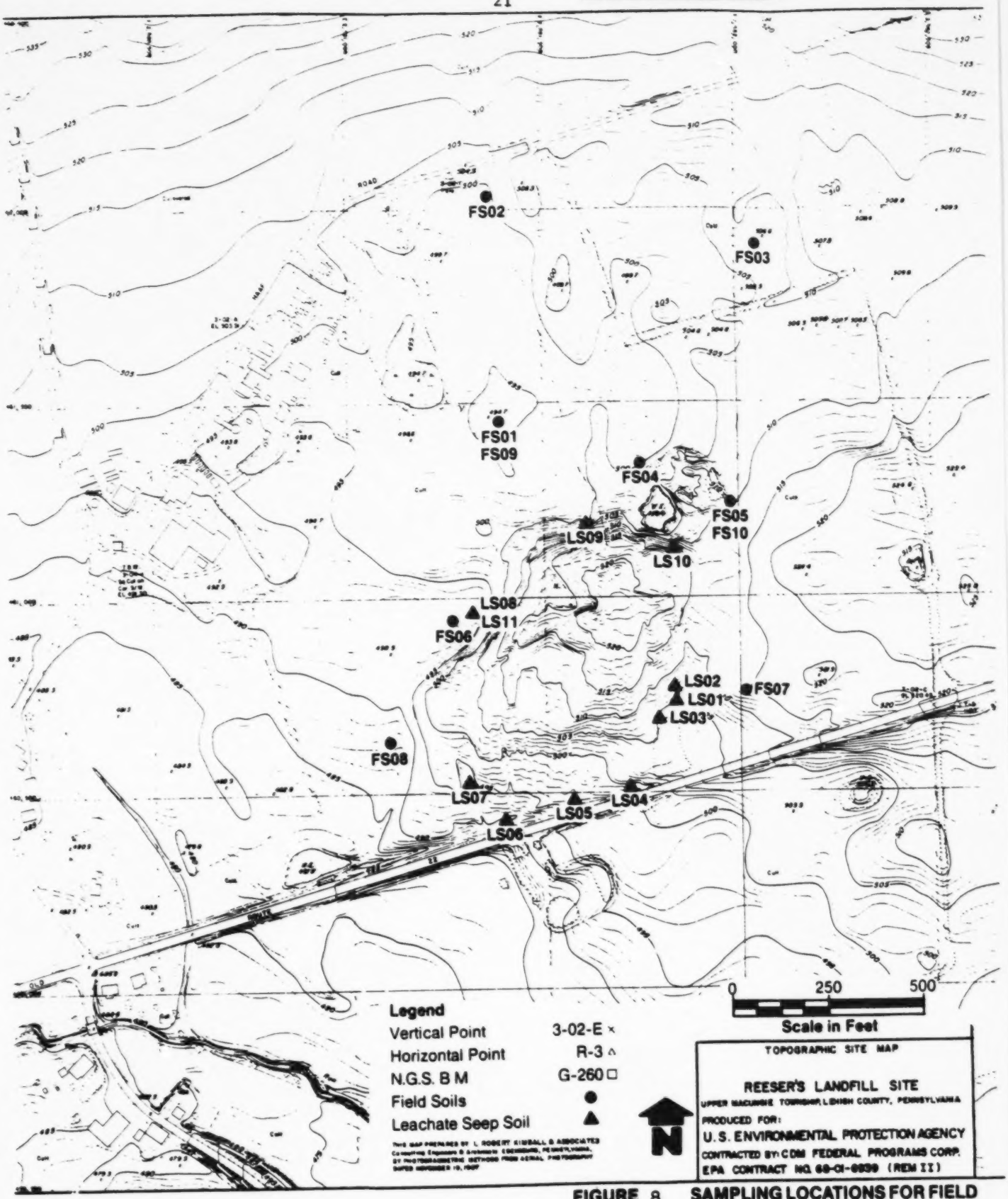

FIGURE 8 **SAMPLING LOCATIONS FOR FIELD AND LEACHATE SEEP SOILS**

TABLE 3

Analytical Results for 3 Typical Landfill Leachate Seep Soil Samples Compared to 2 Background Field Soil Samples (mg/Kg)

INORGANIC ANALYTE	Landfill Soil			Background Soil	
	LS-03	LS-07	LS-10	FS-02	FS-03
Aluminum	9540	8360	7400	12900	15100
Antimony	0	12.1B	0	0	0
Arsenic	39	22	29.7	23.4	25
Barium	162	71.6	106	94.4	63.8
Beryllium	2.6	2.2	3.9	1.1	1
Cadmium	0	0	3.1	1.9	0
Chromium	21	23.4	19.8	17.6	25.8
Cobalt	98.4	65.2	102	14.9	15.9
Copper	71.7	72	63.3	54.5	47.1
Lead	13.1	24.9	14.1	25.9	27.7
Mercury	0	0	0	0	0
Nickel	67.4	65.4	112	15.2	22
Selenium	0	0	0	0	0
Silver	0	0	0	0	0
Vanadium	27	27	24.3	23.8	27
Zinc	165	208	275	88.7	105
Cyanide	0	0	0	0	0

B - Analyte not detected subtantially above the level reported in laboratory or field blanks.

A total of 10 samples (including duplicates) were collected from the water and sediments of four ponds located at various distances northeast, east, southeast, and northwest of the landfill. The samples were designated P-1W through P-5W for water samples and P-1S through P-5S for sediment samples. P-5W and P-5S were duplicates of P-1W and P-1S. Figure 9 shows the locations of these samples. The samples were collected, in part, to give an indication of background water quality. No organic compounds were detected at concentrations above the method detection limits for any of the sediment or water samples from the offsite ponds. An examination of the inorganic chemical data shows that for most of the analytes the concentrations found in the sediment from the pond samples were about the same as those found in the background soil samples (FS-02 and FS-03). For chromium, cobalt, and zinc, the values were slightly elevated above the background levels in most of the samples.

The concentrations of inorganic compounds found in the water of the offsite ponds were below the Federal drinking water standards in most of the samples, with two exceptions. The first is that analyses showed that sample P-1W and P-3W have chromium and cadmium concentrations at or above the level of the Federal drinking water standards. The chromium value is probably suspect due to the presence of chromium in the trip blank. The cadmium value for P-1W is suspect because no cadmium was found in its duplicate, P-5W. The other exception is that sample P-4W showed elevated concentrations of cadmium, chromium, cobalt, copper, iron, lead, and nickel. In the case of chromium and lead, these values were as much as five times above the Federal drinking water standards. The offsite pond that yielded sample P-4W is located about 400 feet to the north-northwest of the landfill and has no surface water connection to the landfill. That pond is shown in a 1938 aerial photograph as being a dry, slight depression overgrown with brush and grasses. Later photographs show it with varying amounts of water. Observation of the area on February 25, 1989 found no water at the location. All drainage in the direction of the pond from the landfill is intercepted by a drainage ditch at the north toe of the landfill slope. Evapotranspiration and precipitation seem to be the major mechanisms for causing any observed water level fluctuations in the pond. There is no known connection among the various offsite ponds and the Reeser's Landfill and, as noted earlier, these ponds were sampled to give an indication of background water quality in the area. Table 4 summarizes the inorganic contaminant data for the offsite pond water samples.

Eight samples (including duplicates) were taken from the waters and sediment of three ponded areas directly on the landfill. The samples were designated LP-1S through LP-4S for the sediment samples and LP-1W through LP-4W for the water samples. LP-4S and LP-4W were duplicates of LP-1S and LP-1W, respectively. Figure 8 shows the locations of these samples. Only two volatile organic compounds, ethylbenzene and xylene, were noted in one landfill pond sediment sample, LP-4S. However, LP-1S, the duplicate of LP-4S showed neither of these compounds. No other organic compounds were detected in any of the landfill pond sediment or water samples. The inorganic analytes in the landfill pond water samples were below federal drinking water standards (MCLs) except for samples LP-3W and LP-4W which showed 30 ug/l and 20 ug/l for cadmium respectively.

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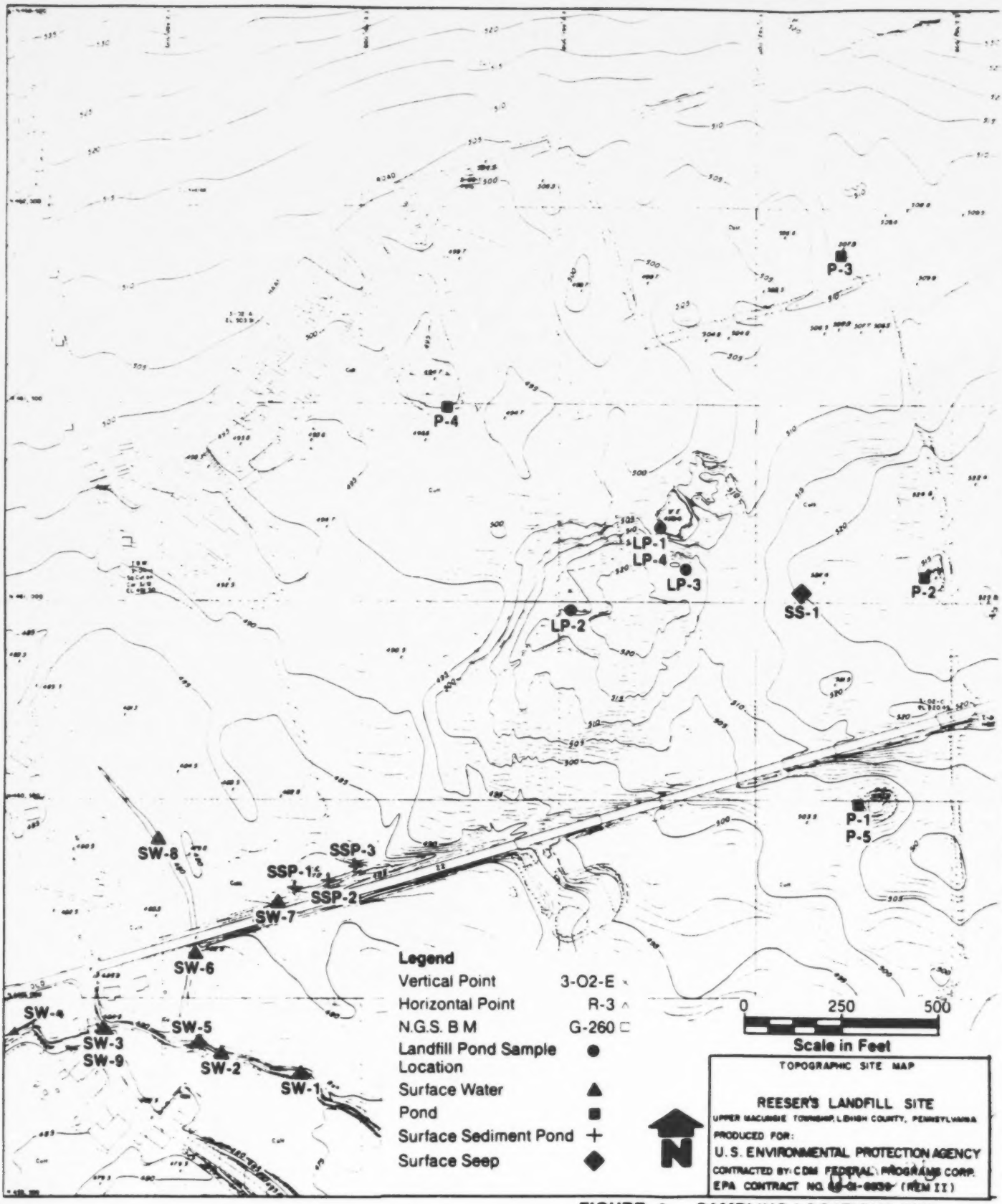

FIGURE 9 **SAMPLING LOCATIONS FOR SURFACE WATER AND SEDIMENTS**

TABLE 4

Off-site Pond Water Analyses (unfiltered), ug/l, and Off-site Pond Sediment Analyses, mg/kg

INORGANIC	WATER					SEDIMENTS				
ANALYTE	P-1W	P-5W	P-2W	P-3W	P-4W	P-1S	P-5S	P-2S	P-3S	P-4S
Antimony	50	0	60	0	0	R	R	R	R	30 L
Arsenic	0	0	0	5.8J	4.0J	10.0L	7.8L	5.9L	4.3L	4.4L
Barium	90	60	90	90	820	100	110	230	80	110
Berylluim	0	0	0	0	9	1.2	1.8	2.3	0	0
Cadmium	10	0	0	30	20	10L	UL	10L	UL	3.2L
Chromium	50	20	0	50	270	50L	80L	120L	30L	50.4L
Cobalt	50	0	0	70	270	70	90	0	20	30
Copper	110	0	70	80	330	40	40	50	30	40
Lead	8.3	9.4	10	30	240	40J	40J	30J	40J	40J
Manganese	4100UL	4800UL	11000UL	1300UL	9000UL	3100J	3500	9700J	450J	1200J
Mercury	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
Nickel	60	0	0	0	320	60	70	160	20	60
Selenium	UL	UL	UL	UL	UL	P.	R	R	R	R
Silver	50L	R	R	R	R	R	R	R	R	R
Thallium	0	0	0	0	0	1.0K	0	0.7K	0	0
Tin	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vanadium	0	0	0	0	100	10	20	0	20	20
Zinc	60	100	0	180	1300	230	300	530	300	270
Cyanide	0	0	0	0	0	0.5	0.4	1.5	0.4	0.4
pH	5.0	5.0	6.0	5.5	5.8	N/A	N/A	N/A	N/A	N/A

Note: Samples labeled p-5W and P-5s are duplicates of P-1W and P-1s, respectively.

R - Unreliable Result. Analyte may or may not be present
L - Analyte present. Reported value may be biased low.
UL- Not detected. Quantitation limit is probably higher.
J - Analyte present. Reported value may not be accurate.
K - Analyte present. Reported value may be biased high.
NR- The substance is not required to be analyzed.
N/A-Not available.

These values are questionable, however, because sample LP-1W the duplicate of LP-4W showed no cadmium. It is also important to note that these surface samples were not filtered in the field prior to "fixing" with nitric acid. These landfill pond samples, it is reasonable to assume, should have the highest potential for contamination of all the surface water samples because of their direct and prolonged contact with the landfill. However, very little contamination was evident.

Three unfiltered water samples and three sediment samples were obtained from the landfill sedimentation pond located at the southwest corner of the landfill. These sample locations are shown on Figure 9 and are designated SSP-1S through SSP-3S for the sediment samples and SSP-1W through SSP-3W for the water samples.

No organic compounds above method detection limits were found in any of the sediment or water samples taken from the sedimentation pond.

Slightly elevated concentrations of lead (60 ug/L in SSP-2W), chromium (50 ug/L in SSP-3W) and cadmium (20 ug/L and 10 ug/L in SSP-2W and SSP-3W, respectively) are most probably due to soil particles suspended in the unfiltered samples and to the relatively acidic (pH_5) nature of the pond water. All of the samples were collected from the pond at the same time, and the pond was not overflowing its containment. It is relevant to note that water sample SSP-1W showed no cadmium and that SSP-2W and SSP-3W showed very little lead in their analyses. Also, the analyses of water samples SSP-1W and SSP-2W indicated very little chromium.

The sedimentation pond sediment samples did not show any significant concentrations of inorganics when compared with data from the background soil samples. (Table 5 summarizes inorganic water and sediment contaminant data.)

Iron Run is the principal surface water drainage stream in the valley in which Reeser's Landfill is located and is a tributary of the Lehigh River. An unnamed tributary of Iron Run drains the area immediately west of the site. As part of the RI, the unnamed tributary and Iron Run were sampled (1) to determine if contaminants are migrating from the site via surface water, and (2) to evaluate potential health effects of any direct contact with these surface waters.

A total of 17 offsite water and sediment samples were collected from Iron Run and its unnamed tributary. The samples were designated SW-1W through SW-9W (for water samples) and SW-1S through SW-9S (for sediment samples). Samples SW-9W and SW-9S were duplicates of SW-3W and SW-3S. Sample locations were distributed along Iron Run, with the first sampling location (SW-1) located farthest downstream and sampling point SW-4 located farthest upstream. Sampling locations SW-5, SW-6, and SW-8 represented the unnamed tributary of Iron Run. Sediment sample SW-7 was taken to determine if any contaminants were migrating from the sedimentation pond to the unnamed tributary of Iron Run. Because of low flow conditions, no water sample was taken at location SW-7. Approximate sample locations are shown on Figure 9.

TABLE 5

Sedimentation Pond Water Analyses (unfiltered), ug/l
and Sedimentation Pond Sediment Analyses, mg/kg

INORGANIC ANALYTE	WATER			SEDIMENTS		
	SSP-1W	SSP-2W	SSP-3W	SSP-1S	SSP-2S	SSP-3S
Antimony	0	0	0	R	R	R
Arsenic	0	0	0	7.8 K	5.0 K	4.8 K
Barium	50 J	50 J	60 J	140	280	90
Beryllium	0	0	0	2.5	3.3	0.9
Cadmium	0	20	10	10.6	20.0	8.2
Chromium	10	30	50	50.0 L	R	R
Cobalt	0	80	100	70	230	50
Copper	0	120	150	70	100	50
Lead	60	6.7	10	30 J	60 J	30 J
Manganese	2700	3100	2100	2000	8300 J	2400 J
Mercury	0	0	0	UL	UL	UL
Nickel	0	80	60	80 L	160 L	50 L
Selenium	0	0	0	0	0	0.9
Silver	0	90 L	60 L	R	R	R
Thallium	0	0	0	0	0	0
Tin	0	0	0	NR	NR	NR
Vanadium	0	30 J	0	10	30	20
Zinc	90 L	180 L	190 L	230 L	470 L	220 L
Cyanide	0	0	0	0	0.2	0
pH	5.3	5.0	5.3	N/A	N/A	N/A

With the exception of an anomalously high value of methylene chloride in SW-8 (1,400 ug/l), no organic compounds were detected in any of the surface stream water samples. Only two groups of inorganics of potential environmental concern are present in these samples: chromium and lead. Concentrations of these compounds (maximum of 30 ug/l for lead, 20 ug/l for chromium) were below federal drinking water standards and are found both above and below the confluence of the unnamed tributary to Iron Run indicating that Reeser's Landfill is not the source of the contaminants. In addition, concentrations of lead found in the water sampled from the unnamed tributary are lower than those found in Iron Run. Cadmium was not found in water samples from the unnamed tributary.

A number of organic compounds were detected in sediment samples from Iron Run and its unnamed tributary. Only one sample, SW-2S, contained BNA compounds above the EPA contract laboratory required detection limits. These compounds are shown in Table 6. These compounds can most probably be attributed to asphalt or diesel fuel fractions in the sample since Iron Run is in close proximity to heavily traveled trucking routes.

Inorganic compounds were detected in a number of stream sediment sample locations. Concentrations of these compounds were about the same as those measured in the background soil samples (FS-02, FS-03). These compounds are shown in Table 7.

The above data indicate that Reeser's Landfill is not acting as a source of either organic or inorganic contamination to the designated receptor stream, Iron Run, and its associated sediments. It is important to note that no mercury was detected in any of the 17 samples. The 1983 SI report had indicated that mercury was a contaminant of concern detected in surface water samples from Iron Run.

Risk Assessment Summary

As part of the RI performed for the Reeser's Landfill site, an assessment was made of the potential impact of past operations at the site on human health and the environment. This baseline assessment is equivalent to an evaluation of the No Action alternative and therefore enables a determination to be made whether remedial actions are indicated for any areas of the site.

Potential receptors of any contamination onsite as a result of direct contact includes hunters, local residents, and wildlife. The surface water stream, Iron Run, is too small to support significant edible fish populations. Receptors of any contamination in the stream would be the lower levels of the aquatic food chain including the lower trophic-level organisms. Receptors of any ground water contamination would include both the nearby residents who have water supply wells and the LCA well #6.

Table 8 is a Summary of all possible effects to humans due to the chemicals of potential concern assessed in this baseline risk assessment.

Table 6

Stream Samples - Sediment
Positive Analytical Results for Organics

(µg/kg)

	n	Average	Maximum	Minimum
Methylene chloride	1	3.0	3	3
Acetone	1	28.0	28	28
Acenaphthene	1	350.0	350	350
Dibenzofuran	1	160.0	160	160
Fluorene	1	250.0	250	250
Phenanthrene	3	1,016.7	2,500	260
Anthracene	1	620.0	620	620
Fluoranthene	3	1,230.0	2,800	430
Pyrene	3	896.7	2,000	340
Butylbenzl phthalate	1	390.0	390	390
Benzo(a)anthracene	1	180.0	180	180
Chrysene	4	417.5	1,100	190
Benzo(b)fluoranthene	3	656.7	1,500	220
Benzo(a)pyrene	4	350.0	940	140
Indeno(1,2,3-cd)pyrene	2	254.5	440	69
Benzo(g,h,i)perylene	4	168.5	420	64

n = Number of samples in which organic contaminants were detected.

Table 7

STREAM
SEDIMENT
INORGANIC ANALYSIS

SAMPLE NUMBER	MATRIX	CONC	X-COOR	Y-COOR	870509 FOR MAY9,87 <<DATE>>	TIME	MD	Enter MD only if None -> INORG Aluminum	INORG Antimony	INORG F-N	INORG Arsenic	INORG F-N	INORG Barium	INORG Beryllium
SW-1S	SOIL	mg/Kg	2580863	459803	871106	925		14100	R		10.0	K	70	
SW-2S	SOIL	mg/Kg	2580660.5	459856.5	871106	955		13300	R		8.0	K	60	
SW-3S	SOIL	mg/Kg	2580352	459915.5	871106	1100		14600	R		5.5	K	40	
SW-4S	SOIL	mg/Kg	2579902	459758	871109	1135		15400	R		8.0	K	60	
SW-5S	SOIL	mg/Kg	2580581	459942	871106	1020		10200	R		7.8	K	370	2.6
SW-6S	SOIL	mg/Kg	2580587	460107	871109	1050		20900	R		6.9	K	190	1.1
SW-7S	SOIL	mg/Kg			871109	1500		15800	R		7.9	K	100	1.1
SW-8S	SOIL	mg/Kg	2580497.5	460385	871109	1345		39300	R		20.0	K	430	
SW-9S	SOIL	mg/Kg	2580352	459915.5	871106	1105		17000	R		9.4	K	50	

SAMPLE NUMBER	INORG Cadmium	F-N	INORG Calcium	INORG Chromium	F-N	INORG Cobalt	INORG Copper	INORG Iron	F-N	INORG Lead	F-N	INORG Magnesium	F-N	INORG Manganese	F-N	INORG Mercury	F-N	INORG Nickel	F-N
SW-1S			15100	110.0	L		40	48200	J	50	J	7900		1100	J		UL	30	L
SW-2S	3.3		7900	30.0	L	20	40	42500	J	50	J	8700		1600	J		UL	40	L
SW-3S	2.9		2900	50.0	L		40	58400	J	30	J	6700		1000	J		UL	20	L
SW-4S			1000		R		40	57200	J	40	J	8200		1400	J		UL	30	L
SW-5S	10.0		2000		R	90	70	153000	J	30	J	2000		10800	J		UL	100	L
SW-6S	2.9		2400		R	30	40	69500	J	20	J	3000		1900	J		UL	20	L
SW-7S	6.7		1400		R	50	60	74400	J	10	J	2900		3100	J		UL	50	L
SW-8S	6.0		3800	70.0	L	50	90	109300	J	160	J	5000		2900	J		UL		UL
SW-9S			5800		R		40	47800	J	40	J	9600		840	J		UL		UL

SAMPLE NUMBER	INORG Potassium	INORG Selenium	F-N	INORG Silver	F-N	INORG Sodium	INORG Thallium	F-N	INORG Tin	INORG Vanadium	INORG Zinc	F-N	INORG Cyanide
SW-1S					R				NR	20	190	L	0.2
SW-2S					R				NR	20	160	L	
SW-3S					R				NR	20	150	L	
SW-4S					R				NR	20	160	L	
SW-5S					R				NR	30	290	L	0.6
SW-6S	1200				R				NR	10	180	L	
SW-7S					R				NR	20	190	L	
SW-8S					R				NR	50	510	L	
SW-9S					R				NR	10	110	L	0.2

Table 8

Summary of Endangerment Assessment

Exposure Medium	Route of Exposure	Carcinogenic Effects Maximum Exposure	Hazard Index Maximum Exposure
Groundwater			
Off-site Residential Well	Current off-site ingestion	NR	<1
Off-site Monitoring Well	Future off-site ingestion	NR	<1
Soils			
Surficial	Future on-site dermal contact and ingestion	1×10^{-9}	<1
	Future field soil dermal contact and ingestion	9×10^{-10}	<1
	Intermittent on-site dermal contact and ingestion	5×10^{-11}	<1
	Intermittent field soil dermal contact and ingestion	1×10^{-8}	<1
Subsurface	Construction of on-site housing and consequential exposure to volatilized subsoil organics	8×10^{-8}(a)	<1(a)
Beef produced locally	On-site feed production and ingestion of water from landfill ponds	8×10^{-8}	<1
	Field soils feed production and ingestion of water from field ponds	3×10^{-6}	<1

a = No maximum exposure scenario, average exposure reported.
NR = Not relevant.

As can be seen in the table, no carcinogenic effects which might be attributed to the landfill would produce an exposure greater than 8×10^{-8}. Also, no scenario involving human exposure to the site would result in a Hazard Index of 1 or greater. The only potential adverse effects are those under the extreme maximum conditions of the beef ingestion scenario. This is considered to be an extreme and unlikely scenario, and, therefore, is not considered probable under current or future land use. It is important to note that this "worst case" situation involves the farm fields and the surface waters which surround the landfill, and which were investigated as "background" during the RI, and does not involve the landfill itself.

Iron Run, which flows west to east within approximately 800 feet of the landfill, is the primary surface water drainageway for the several thousand acres which comprise the valley in which Reeser's Landfill is located, and, as such, is EPA's designated surface water receptor for purposes of assessing risks. The stream receives a tiny portion of its water as runoff by way of overflow from the Landfill sedimentation pond into an intermittent unnamed tributary located west of the site, but only during extended periods of heavy precipitation. The small (surface area approx. 0.1 acre) sedimentation pond acts as a settling basin for runoff from the approximately 15-acre landfill.

As noted earlier, four samples and one duplicate sample of water and sediments were obtained from Iron Run. Samples SW-1 and SW-2 were obtained downstream from the point at which any landfill runoff might enter the stream (see Figure 3, Surface Water Drainage Patterns, and Figure 9, Surface Water and Sediment Sampling Locations). Samples SW-3 and SW-4 were obtained upstream of that point. Sample SW-9 is a duplicate of SW-3.

Analysis of the water samples showed no contamination from organic compounds. All inorganic concentrations were below Maximum Concentration Limits (MCLs). There were no significant differences among samples obtained upstream and those obtained downstream from the point where the unnamed tributary enters Iron Run.

Federal Ambient Water Quality Criteria (AWQC) for the chronic (long-term) exposure of fresh water aquatic life are slightly exceeded equally upstream and downstream of the site for lead and chromium. No acute (short-term) exposure criteria are exceeded. Table 9 shows the Remedial Investigation water sample analyses for Iron Run. Table 9 includes EPA AWQC for metals.

Results of inorganic analysis of the sediments of Iron Run and of the unnamed tributary are shown on Table 7. Again, contaminants upstream and downstream are approximately equal. It is notable that the most contaminated sediment sample obtained during the Remedial Investigation, SW-8s, was obtained in the unnamed tributary, upstream from the point of entry of the landfill sedimentation pond inflow. Two Haafsville residences discharge sewage into this intermittent tributary. Sample SW-2s was contaminated with elevated levels of Base Neutral/Acid Extractable organic compounds (BNAs). However, as noted earlier, these are most probably due

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TABLE 9

Comparison of Water Analyses from Iron Run With MCLs
And Chronic AWQC *
ug/l

INORGANIC ANALYTE	UPSTREAM			MCL	AWQC	DOWNSTREAM	
	SW-3W	SW-4W	SW-9W			SW-1W	SW-2W
Antimony	0	0	0	N/A	1,600	0	0
Arsenic	0	0	0	50	48	0	0
Barium	0	0	0	1000	N/A	0	0
Beryllium	0	0	0	N/A	5.3	0	0
Cadmium	0	0	9	10	1.1	0	0
Chromium	0	20	20	50	10	0	10
Cobalt	0	0	0	N/A	N/A	0	0
Copper	0	0	0	N/A	12	0	0
Lead	3.1 J	20.0	10.0	50	3.2	3.8J	30.0
Manganese	0	0	0	N/A	N/A	0	0
Mercury	0	0	0	2	0.012	0	0
Nickel	0	0	0	N/A	160	0	0
Selenium	0	0	0	10	35	0	0
Silver	0	0	0	50	.12	0	0
Thallium	0	0	0	N/A	40	0	0
Tin	0	0	0	N/A	N/A	0	0
Vanadium	0	0	0	N/A	N/A	0	0
Zinc	60L	60L	50L	N/A	110	90L	80L
Cyanide	0	0	0	N/A	5.2	0	0
PH	6.0	5.5	6.0	N/A	6.5	6.5	6.5

* Assumes a hardness of 100 mg/l.
N/A = Not Available

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to asphalt or fuel contamination because elevated levels of these compounds were not observed in the soils, sediments, or pond waters of the Landfill.

It is clear from these observations that the slightly elevated levels of the various contaminants found in Iron Run did not have their origins at the Reeser's Landfill.

Description of The No Action Alternative

Under the No Action alternative, no remedial actions will be taken at the Reeser's Landfill. Because the site is a landfill, and wastes will be left onsite, a review will be conducted within five (5) years in consideration of Section 121(c) of SARA. For the purposes of the review, it is recommended that all of the available offsite monitoring wells established during the RI, the LCA well No. 6, and two Haafsville residential wells should be sampled, and those samples analyzed. It is further recommended that the home wells currently associated with the Neimeyer residence and the Grenewald residence be chosen as the two residential wells. Figure 2 shows the locations of these wells.

Even though compliance with the provisions of Section 121 of SARA, regarding the degree of cleanup, is not triggered by the No Action alternative, it is appropriate to demonstrate that this alternative is protective of human health and the environment.

The alternative meets Maximum Contaminant Levels (MCLs) in that no site-related contamination was evident in any of the currently utilized ground water drinking sources in the area. Maximum Contaminant Levels (MCLs) have been evaluated for ground water in the immediate vicinity of the site i.e., in the monitoring wells established for purposes of the Remedial Investigation, and for Iron Run, the stream which receives site runoff. Although neither of these is currently used as a water supply, MCLs were evaluated because the potential exists for use of these sources as potable water in the future. No MCLs were exceeded in the area ground water, nor in Iron Run.

Maximum Contaminant Levels have not been considered for the various seasonal ponds onsite nor for the landfill sedimentation pond because these are not used as drinking water sources and because no likelihood exists for their potential future use as potable water supplies.

Chronic Ambient Water Quality Criteria (AWQC) for the protection of aquatic life developed pursuant to Section 304(a)(1) of the Clean Water Act were considered with regard to the onsite sedimentation pond. Iron Run, the ultimate receptor of any discharge from the sedimentation pond was also evaluated under chronic AWQC.

AWQC for the protection of aquatic life are exceeded in Iron Run for the contaminants lead and chromium. However the contamination levels found downstream of possible site influence show no significant difference when compared to contamination levels upstream (see Table 9).

Chronic AWQC for the protection of aquatic life were exceeded in one or more of the sedimentation pond unfiltered water samples for cadmium, chromium, copper, lead, and possibly, silver and zinc (compare analyses in Table 5 with AWQC values listed in Table 9). This small (less than 0.1 acre) pond receives its water as runoff from the landfill and also as runoff from a 300-foot-long section of Old Route 22 (see Figure 3). The pond's designated purpose is to catch and contain suspended soil particles from landfill runoff water. The pond contributes water to Iron Run via the intermittent, unnamed tributary on those infrequent occasions when its containment capacity is exceeded. This occurs only during extended periods of heavy precipitation. Water levels in the pond have demonstrated seasonal fluctuations of greater than two feet. The pond contains no fish, but is used by muskrats, frogs, and a number of species of aquatic invertebrates. The plant and animal populations within the limited water capacity of the pond have been observed to be healthy. Iron Run, as the principal surface water drainageway through the valley in which Reeser's landfill is located, receives runoff contributions from several hundred acres, principally farmland, upstream before being influenced by any runoff contribution from the 15-acre landfill via the sedimentation pond.

Several offsite (background) ponds in the vicinity of Reeser's Landfill which were sampled during the Remedial Investigation were found to contain inorganic contaminants in concentrations equal to, or greater than, the landfill sedimentation pond (see Table 10).

For the purposes of this evaluation, the consideration of AWQC is inappropriate with respect to the sedimentation pond for the following reasons:

* The pond's designated purpose is to trap silt in runoff water from the landfill.

* The pond's inadvertent wildlife populations are apparently healthy.

* The total contribution from the pond to the water volume and water quality of Iron Run is insignificant.

* The water quality in Iron Run is essentially the same downstream and upstream of the site.

* The pond is too small to be a significant influence on wildlife populations in the area.

* Water quality in the sedimentation pond is not significantly different from that of the nearby (background) ponds.

TABLE 10

Comparison Of Sedimentation Pond and Offsite Pond Water Samples
Inorganic Analyses, ug/l

Inorganic Analyte	SEDIMENTATION POND		OFFSITE PONDS	
	Highest Value	Arithmetic Mean*	Highest Value (s)	Sample (s)
Antimony	0	0	60 50	P-2W P-1W
Arsenic	0	0	5.8J 4.0J	P-3W P-4W
Barium	60 J	53 (J)	820 90	P-4W P-1W;P-2W;P-3W
Beryllium	0	0	9	P-4W
Cadmium	20	10	30 20	P-3W P-4W
Chromium	50	30	270 50	P-4W P-1W; P-3W
Cobalt	100	60	270 70	P-4W P-3W
Copper	150	90	330 110	P-4W P-1W
Lead	60	25.5	240 30	P-4W P-3W
Manganese	3100	2630	11,000 UL	P-2W
Mercury	0	0	UL	——
Nickel	80	46.6	320 60	P-4W P-1W
Selenium	0	0	UL	——
Silver	90 L	50 (L)	50 L	P-1W
Thallium	0	0	0	——
Tin	0	0	NR	——
Vanadium	30 J	10 (J)	100	P-4W
Zinc	190 L	153.3 (L)	1300 180	P-4W P-3W
Cyanide	0	0	0	——

* The Arithmetic Mean is the sum of the three values (representing the three samples) obtained from the Sediment Pond, divided by 3.

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The No Action alternative site is protective of both human health and the environment. All potential pathways were examined in order to make this determination. No direct contact threat exists from the site soils or from ground water. The Reeser's Landfill has not adversely impacted the receptor stream, Iron Run, as evidenced by the presence of similar contaminant levels upstream and downstream from the site. Similarly, water quality in the offsite ponds and the onsite sedimentation pond is not significantly different.

Therefore, EPA has determined that no remedial action is necessary but that a review of area ground water should be conducted within five (5) years.

It is important to emphasize here that EPA's selection of the No Action alternative under Superfund is not to be construed as a recommendation or indication that the Commonwealth of Pennsylvania should not pursue the enforcement of the Order issued in 1981 by PA DER against Edward Reeser for the closure of the landfill pursuant to Pennsylvania's municipal waste regulations.

Responsiveness Summary

On Friday, February 24, 1989, The Allentown, Pennsylvania Morning Call ran an advertisement announcing the preferred alternative for the Reeser's Landfill Superfund Site. The advertisement also announced the February 25, 1989 to March 26, 1989 public comment period.

During the comment period, EPA Region III received no requests for a public meeting, and only one letter of comment on the proposed alternative. That letter was a note of appreciation for EPA's concern and involvement and was supportive of EPA's proposed alternative. A brief article concerning EPA's findings regarding the landfill appeared in the Saturday, February 25, 1989 Morning Call.

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U.S. Environmental Protection Agency Requests Comments on the Proposed Plan for Reeser's Landfill Superfund Site in Lehigh County, Pennsylvania

The U.S. EPA has completed a Draft Remedial Investigation and Feasibility Study for the Reeser's Landfill Superfund Site. The Draft Remedial Investigation and Feasibility Study, conducted to quantify any contamination which might be attributable to the site and evaluate alternatives for cleanup, are now available for public review at:

Parkland Community Library

4422 Albert Avenue
Allentown, PA 18104

Listed below are the cleanup alternatives set forth in the Feasibility Study:

1. No action.
2. Restricted access with ground water monitoring for thirty (30) years.
3. Regrade the site, divert surface water, and revegetate the landfill surface.
4. Install perimeter permeable trench to intercept and vent methane gas in addition to those options listed under Alternative 3.
5. Air monitor and construct a multilayer cap consisting of clay, geotextile materials and soil cover in addition to those options listed under Alternative 4.

The detailed Remedial Investigation found no contamination in the local wells or streams and concluded that human health and the environment are not endangered. EPA's preferred alternative is a modified version of Alternatives 1 and 2. Under the modified alternative, EPA will not implement any remedial actions at the site. However, the water in the ground water wells will be sampled and analyzed each year for a period of five (5) years. If, during this time, contamination is detected in the wells, the risk posed by that contamination will be determined, and appropriate action will be taken.

The public comment period is open until March 26, 1989. If there is sufficient interest, EPA may hold a public meeting during the public comment period. Interested may contact Theresa Bickel at (215) 597-8573 by March 10 to request a public meeting.

The remedy selected will be documented in a Record of Decision that summarizes EPA's decision process and responds to the public comments received. Citizens are encouraged to review documents related to the Reeser's Landfill Remedial Investigation and Feasibility Study and submit written comments to following address:

Theresa Bickel (3PA00)
Public Affairs Specialist
U.S. EPA — Region III
Philadelphia, PA 19107

REESER'S LANDFILL SITE
ADMINISTRATIVE RECORD FILE * **
INDEX OF DOCUMENTS

SITE IDENTIFICATION
Preliminary Assessment/Site Inspection

1) Report: Preliminary Assessment and Site Inspection of Reeser's Landfill, prepared by NUS Corporation, 12/21/84. P. 1-170. References are listed on P. 60, 61, and 170.

* Administrative Record File available 2/9/89, update 3/6/89.

** Supporting Sampling Data is located at the EPA Region III Central Regional Laboratory in Annapolis, Maryland.

Note: Company or organizational affiliation is mentioned only when it appears in the record.

REMEDIAL ENFORCEMENT PLANNING
Potentially Responsible Party General Correspondence

1) Letter to Mr. Edward F. Reeser from Mr. Stephen R. Wassersug, U.S. EPA, re: Notice letter to perform corrective action, 2/6/86. P. 1-4.

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REMEDIAL RESPONSE PLANNING
Work Plans

1) Report: Health and Safety Plan for Reeser's Landfill Site, Upper Macungie Township, Pennsylvania, (no author cited), 6/87. P. 1-37.

2) Report: Final Work Plan for Reeser's Landfill Site, Upper Macungie Township, Pennsylvania, for Preparation of Remedial Investigation/ Feasibility Study, Volume I, prepared by Mr. Michael F. Coia, Roy F. Weston, Inc., 7/15/87. P. 38-169.

3) Memorandum to the File from Mr. Victor J. Janosik, U.S. EPA, re: Formal approval of the Reeser's Landfill Sampling and Analysis Plan, 3/4/88. P. 170-297. The Sampling and Analysis Plan is attached.

Remedial Investigation/Feasibility Study Reports

1) Report: Draft Final, Remedial Investigation/Feasibility Study, for the Reeser's Landfill Site, Upper Macungie Township, Pennsylvania, Volumes I-III, prepared by Mr. Raymond Scheinfeld, Roy F. Weston, Inc., 11/88. P. 1-930.

Correspondence and Supporting Documentation

1) Letter to Mr. Mark Cleveland, Roy F. Weston, Inc., from Mr. Ronald F. Klinikowski, Pennsylvania Department of Environmental Resources, re: Transmittal of the draft copy of a list of Applicable or Relevant and Appropriate Requirements for remediating non-specific sites, 5/23/88. P. 1-1.

2) Letter to Mr. Ron Klinikowski, Pennsylvania Department of Environmental Resources, from Mr. Victor J. Janosik, U.S. EPA, re: Hydrogeology review of the Reeser's Landfill Draft Remedial Investigation, 1/27/89. P. 2-2.

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IMAGERY

1) Letter to Mr. Victor Janosik, U.S. EPA, from Mr. Larry Mata, The Bionetics Corporation, re: Transmittal of the Site Analysis, Reeser's Landfill, Haafsville, Pennsylvania, Interim Report, 3/10/87. P. 1-19. The Interim Report for Reeser's Landfill is attached.

2) Memorandum to Mr. Victor Janosik, U.S. EPA, from Mr. Richard G. Park, U.S. EPA, re: Aerial photographic analysis of Reeser's Landfill, Haafsville, Pennsylvania, 3/25/87. P. 20-20.

3) Memorandum to Mr. Victor Janosik, U.S. EPA, from Mr. Richard G. Park, U.S. EPA, re: Transmittal of the Site Analysis for Reeser's Landfill, 4/1/87. P. 21-21.

COMMUNITY INVOLVEMENT
Community Relations Plans

1) Report: Final Community Relations Plan for the Reeser's Landfill Site, Upper Macungie Township, Pennsylvania, prepared by Mr. Robert T. Pierce, Roy F. Weston, Inc., 4/28/88. P. 1-23.

Fact Sheets, Press Releases, Public Notices

1) Report: Superfund Program Fact Sheet, Proposed Remedial Action Plan, prepared by U.S. EPA, 2/23/89. P. 1-6.

Meeting Summaries, Trip Reports, Correspondence with the Public

1) Memorandum to Mr. Ray Germann, U.S. EPA, from Mr. Victor J. Janosik, U.S. EPA, re: Reeser's Landfill Monitoring Wells, 7/14/87. P. 1-1.

2) Letter to a resident from Mr. Ray Germann, U.S. EPA, re: Permission to use a portion of the resident's property for sampling, 7/21/87. P. 2-2.

3) Handwritten memorandum to the File from Mr. Victor J. Janosik, U.S. EPA, re: Field trip to visit residences immediately surrounding the site, 7/24/87. P. 3-5.

4) Memorandum to the File from Mr. Victor J. Janosik, U.S. EPA, re: Reeser's Landfill home water supply samples, 3/11/88. P. 6-8. A map of home water supply sources for October, 1987 Remedial Investigation/Feasibility Study sampling is attached.

5) Letter to Mr. Harvey Merkel from Mr. Victor J. Janosik, U.S. EPA, re: October, 1987 home water supply analysis, 3/18/88. P. 9-10.

6) Letter to Mr. W. Scott and Ms. Gwen Kleinshuster from Mr. Victor J. Janosik, U.S. EPA, re: October, 1987 home water supply analysis, 3/18/88. P. 11-11.

7) Letter to Mr. and Mrs. Frank and Anna Tercha from Mr. Victor J. Janosik, U.S. EPA, re: October, 1987 home water supply analysis, 3/18/88. P. 12-13.

8) Letter to Mr. Glenn B. Higbie, Lehigh County Authority, from Mr. Victor J. Janosik, U.S. EPA, re: October, 1987 Reeser's Landfill water sampling, 3/18/88. P. 14-14.

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GENERAL GUIDANCE DOCUMENTS *

1) "Promulgation of Sites from Updates 1-4," Federal Register, dated 6/10/86.

2) "Proposal of Update 4," Federal Register, dated 9/18/85.

3) Memorandum to U. S. EPA from Mr. Gene Lucero regarding community relations at Superfund Enforcement sites, dated 8/28/85.

4) Groundwater Contamination and Protection, undated by Mr. Donald V. Feliciano on 8/28/85.

5) Memorandum to Toxic Waste Management Division Directors Regions I-X from Mr. William Hedeman and Mr. Gene Lucero re: Policy on Floodplains and Wetlands Assessments for CERCLA Actions, 8/6/85.

6) Guidance on Remedial Investigations under CERCLA, dated 6/85.

7) Guidance on Feasibility Studies under CERCLA, dated 6/85.

8) "Proposal of Update 3," Federal Register, dated 4/10/85.

9) Memorandum to Mr. Jack McGraw entitled "Community Relations Activites at Superfund Sites - Interim Guidance," dated 3/22/85.

10) "Proposal of Update 2," Federal Register, dated 10/15/84

11) EPA Groundwater Protection Strategy, dated 9/84.

12) Memorandum to U.S. EPA from Mr. William Heckman, Jr. entitled "Transmittal at Superfund Removal Procedures - Revision 2," dated 8/20/84.

13) "Proposal of Update 1," Federal Register, dated 9/8/83.

14) Community Relations in Superfund: A Handbook (interim version), dated 9/83.

15) "Proposal of First National Priority List," Federal Register, dated 12/30/82.

16) "Expanded Eligibility List," Federal Register, dated 7/23/82.

17) "Interim Priorities List," Federal Register, dated 10/23/81.

18) Uncontrolled Hazardous Waste Site Ranking System: A User's Manual (undated).

19) Field Standard Operating Procedures - Air Surveillance (undated).

20) Field Standard Operating Procedures - Site Safety Plan (undated).

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* Located in EPA Region III office.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
Post Office Box 2063
Harrisburg, Pennsylvania 17120

March 31, 1989

Deputy Secretary for
Environmental Protection

(717) 787-5028

Stephen R. Wassersug, Director
Hazardous Waste Management Division
EPA Region III
841 Chestnut Building
Philadelphia, PA 19107

Re: Letter of Concurrence
Reesers Landfill, Upper Macungie Twp., Lehigh Co.
Record of Decision (ROD)

Dear Mr. Wassersug:

The Department has reviewed the documents associated with the above referenced Superfund Site. The selected remedial action alternative for Reesers Landfill include:

* The No Action alternative. Under this alternative, no remedial actions will be taken at the site. This alternative is protective of human health and the environment as all potential pathways were examined to make this determination.

* In accordance with section 121 (c) of SARA, the ground water quality in the vicinity of the site will be reviewed by EPA within five years.

I hereby concur with the EPA's proposed remedy with the following conditions:

* The Department will be given the opportunity to concur with decisions related to the remaining waste and evaluate appropriate alternatives to assure compliance with DER cleanup ARARs.

* The Department will reserve our right and responsibility to take independent enforcement actions pursuant to state law.

* This concurrence with the selected remedial action is not intended to provide any assurances pursuant to SARA Section 104(c)(3).

Thank you for the opportunity to concur with this EPA Record of Decision. If you have any questions regarding this matter please do not hesitate to contact me.

Sincerely,

Mark M. McClellan
Deputy Secretary
Environmental Protection